# In situ study of short-term variations of redox species chemistry in intertidal permeable sediments of the Arcachon lagoon



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| Résumé en anglais | We investigated the composition of porewaters in intertidal sediments in response to the diurnal rise and fall of tides. For this reason, we deployed an in situ voltammetric system to measure vertical distribution and time-series at defined depths of O2, Mn(II), Fe(II), and S(−II) in the porewater of permeable sediments from a protected beach in the Arcachon Bay. We also report microprofiles of O2 and pH together with sediment properties (organic carbon, particulate reactive manganese and iron, porosity and permeability). Results shows that the oxygen dynamics in the upper sediment at low tide appeared to be mainly controlled by microphytobenthos activity, which may migrate downward just before immersion. The tidal forcing seemed to influence the oxygen dynamic in a minor way through flushing of the uppermost sediment porewater layer at the beginning and end of immersion. Vertical profiles and time-series measurements showed that the distributions of reduced species varied with tides. Although this work reveals that the upper sediment layer was subject to redox changes, the response of vertical distributions of redox species to tidal and night–day cycles did not have a cyclic pattern. |
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